

What is claimed is:

1. A purifying apparatus for flowing water in which a negative electrode plate is disposed on a flowing water bed and a positive electrode plate is disposed in an upper face oppositely to the negative electrode plate, characterized in that the positive electrode plate is adapted so as to be dipped below a water surface of the flowing water with floats being disposed at least any of front/back and left/right of the positive electrode plate in a flowing direction of the flowing water, in the positive electrode plate there is arranged means for disposing it to an opposed upper face position with respect to the negative electrode plate, and the positive electrode plate and the negative electrode plate are provided with an electric field generating means, so that water pollution substances contained in the flowing water are oxidized and decomposed by a generation of high electric field pulses.

2. A purifying apparatus of claim 1, wherein in the positive electrode plate there is arranged means for vertically moving it.

A 3. A purifying apparatus of claim 1 ~~or 2~~, wherein there is arranged gas collecting means.

4. A purifying apparatus of claim 3, wherein the gas collecting means is arranged in a rear portion of the positive electrode plate in the flowing direction of the flowing water.

A 5. A purifying apparatus of claim 3 ~~or 4~~, wherein the

gas collecting mean is arranged in a positive electrode plate back face upper portion which is reverse to an opposing face of the negative electrode plate.

A ^{of claim 1}
6. A purifying apparatus ~~of any one of claims 1 to 5~~, wherein the positive electrode plate has at least one of metal or metal oxide.

A ^{of claim 1}
7. A purifying apparatus ~~of any one of claims 1 to 6~~, wherein the positive electrode plate is a metal, a ceramics or a resin, or a composite body consisting of more than two of the formers.

A ^{of claim 1}
8. A purifying apparatus ~~of any one of claims 1 to 7~~, wherein the positive electrode plate is a porous plate.

A ^{of claim 6}
9. A purifying apparatus ~~of any one of claims 6 to 8~~, wherein a positive electrode substance is at least one of titanium oxide, ruthenium oxide, cobalt oxide, nickel oxide, tin oxide and platinum.

A ^{of claim 7}
10. A purifying apparatus ~~of any one of claims 7 to 9~~, wherein a plate of porous titanium, porous ceramics or stainless is made a base plate in the positive electrode plate.

A ^{of claim 6}
11. A purifying apparatus ~~of any one of claims 6 to 10~~, wherein plural positive electrode face portions each having a positive electrode substance are arranged in the positive electrode plate.

A ^{of claim 1}
12. A purifying apparatus ~~of any one of claims 1 to 11~~, wherein the positive electrode plate has a concave curved face

opposite to the negative electrode plate.

A 13. A purifying apparatus of ^{of claim 1} ~~any one of claims 1 to 12~~, wherein gas seal means is arranged in the positive electrode plate.

14. A purifying apparatus of claim 13, wherein the gas seal means is arranged in a positive electrode plate back face which is reverse to the opposing face of the negative electrode plate.

A 15. A purifying apparatus of ^{of claim 2} ~~any one of claims 2 to 14~~, wherein the positive electrode plate is adapted by the vertically moving means such that its dipped depth from the water surface is $1/5 - 1/10$ of a water depth.

A 16. A purifying apparatus of ^{of claim 1} ~~any one of claims 1 to 15~~, wherein a stainless plate or a metal plate to which a platinum foil coating has been applied is made the negative electrode plate.

A 17. A purifying apparatus of ^{of claim 2} ~~any one of claims 2 to 16~~, wherein the means for vertically moving the positive electrode plate in a gravity direction is provided with a differential transformer, thereby constituting a control mechanism for changing a voltage between faces of the positive electrode plate and the negative electrode plate between 200 V/cm and 10 KV/cm.

A 18. A purifying apparatus of ^{of claim 1} ~~any one of claims 1 to 17~~, wherein a turbidity detector is provided in front of a flowing

water flow with respect to the positive electrode plate, thereby constituting an automatic control mechanism for changing an electric current value between 1 mA and 100 mA in compliance with the turbidity.

A 19. A purifying apparatus ^{of claim 1} ~~of any one of claims 1 to 18~~, wherein a flow velocity meter is installed in the flowing water, thereby constituting an automatic control mechanism for changing a frequency between 10 kHz and 150 kHz from the flow velocity.

A 20. A purifying apparatus ^{of claim 1} ~~of any one of claims 1 to 19~~, wherein a plurality of metal made protrusions are provided on the electrode plate of at least one of the positive electrode plate and the negative electrode plate, and a structure by which the flowing water forms a turbulent flow is obtained by causing a height of the protrusion to be 10 - 15% of a distance between the positive electrode plate and the negative electrode plate.

A 21. A purifying apparatus ^{of claim 1} ~~of any one of claims 1 to 20~~, wherein there is provided a mechanism for manually or automatically cleaning a surface portion or surface portions of one or both of the positive electrode plate and the negative electrode plate by a high pressure water jetting unit or a roll brush.

A 22. A purifying apparatus ^{of claim 3} ~~of any one of claims 3 to 21~~, wherein the gas collecting means has a gas reservoir, and there is provided a mechanism for sucking a gas in the gas reservoir

by a water pressure, a suction pump or a blower, mixing the gas with hydrogen gas by an electrolysis or hydrogen gas by a hydrogen bomb, and reducing the gas to N₂ and water by a catalyst.

A 23. A purifying apparatus ^{of claim 1} ~~of any one of claims 1 to 22~~, wherein there is adjunctively provided, together with a unit for collecting and separating sediments generated by a suspension, a sedimentation tank decreasing the flow velocity in a rear of the unit in the flowing direction, or there is adjunctively provided a system in which a water flow is dammed and a part thereof is pumped up by a pump so as to be bypassed from the water flow and the sediments are sedimented in a gravity sedimentation tank, and a supernatant liquid is returned to an original river.

A 24. A purifying apparatus ^{of claim 2} ~~of any one of claims 2 to 23~~, wherein there is provided an emergency evacuation unit for lifting up the vertically moving means in an upward direction by an oil pressure or an electric motor at an abnormal flow rate time such as a flood.

A 25. A purifying method for flowing water, characterized in that the flowing water is treated by using an apparatus of ^{claim 1} ~~any of claims 1 to 24~~.